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ABSTRACT

The American Institute of Architects convened a 1997 conference to explore the issues specific to designing specialties in educational facilities caused by educational reform's emerging methodologies and teaching philosophies. This document discusses the presenter's views of these issues in the following areas: creating engaging learning environments for a technology savvy student body; reforming educational curricula to meet 21st century job demands; planning educational facilities, performance spaces, libraries, and media learning centers that include participation from and consideration of its users; and the growing presence of new media technology into the learning environment. Final comments address how specialties in educational facilities are changing the architectural profession. (GR)

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Specialties in EDUCATIONAL Facilities

Agassiz Elementary School; Architect: HMFH Architects Photographer: Wayne Soverns, Jr.

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AIA Committee on - Architecture for Education

June 19–21, 1997
Boston

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AIA

Specialties in Educational Facilities

June 19-21, 1997
Boston

by John Rossi, Associate AIA
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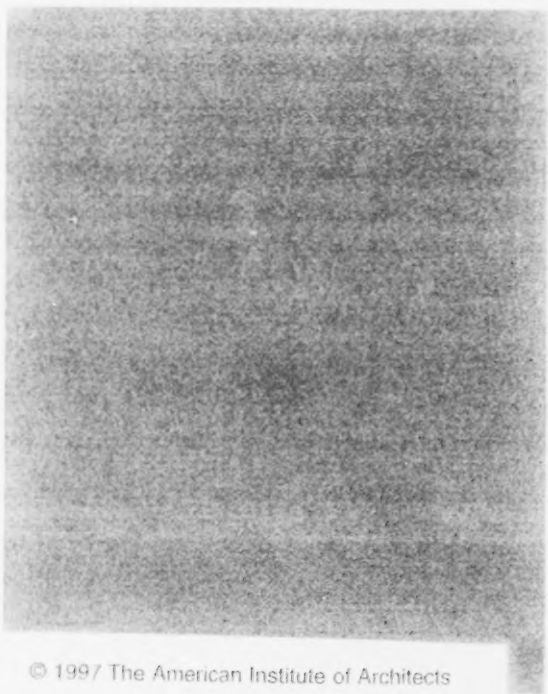

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The AIA Committee on Architecture for Education (CAE) met June 19-21, 1997, at Boston's Copley Plaza Hotel to explore issues specific to designing specialties in educational facilities. Case studies of innovative learning environments were presented and enlightening learning models were discussed. New methodologies and teaching philosophies were described as the underpinnings to educational reform that are creating entirely new learning models. More than 150 professionals participated, including architects, designers, educators, and technology specialists.

Creating Engaging Learning Environments

Delivering new approaches and a fresh perspective to academic clients is increasingly more important and in demand. Student audiences of all ages are becoming increasingly more sophisticated. Many of today's four-year-olds are technology savvy and computer literate. Today's 15-year-olds are high-functioning, multimedia users who surf the Web, communicate via e-mail and cellular phones, see war live on CNN, and rock-out with MTV. They are not afraid of exploring, playing, or pushing multiple-platforms or software programs. These teenagers, often bilingual, have matured with global issues such as AIDS, ozone depletion, and deforestation.

New models of teaching link broad-based disciplines to real-world issues and foster responsible citizenship. Design and its impact on the learning environment have great consequence for student and teacher. No environment is neutral-it either enhances or detracts from learning.

We are the summation of our life-long experiences and exposures. While language, culture, and money may have their effects on the world, human nature is, in many ways, the same. This is particularly true when designing caring and nurturing, yet challenging, learning environments.

For all students an ideal learning process happens in small groups. For pre-K and elementary students, learning spaces are an extension of the home. These are safe, nonhierarchical incubators. Middle-school-aged students learn more from one another. This can be encouraged by creating a neighborhood allowing for controlled, by-chance gathering. The herd instincts of young adults is a powerful force. While groups want autonomy and independence, they also want to learn from the teacher. Realizing this, a teacher needs to be intregal with his or her students. Strive to maintain a distance no further than 15 to 20 feet between student and teacher. Simply rearranging the seating in conventional classrooms can created a huge difference in student response.

"Architecture is a substantial component of teaching science," said Alfred G. Sculco, chairman of the Science Department at Noble & Greenough School. The school, popularly known as Noble's, in Dedham, Mass., is home to 500 students, grades 7 through 12. Sculco's response to the 1973 energy crisis created new opportunities for learning. He and his colleagues at the Noble's designed and constructed a building with the sole purpose of integrating an awareness of the energy problems. The curriculum was shaped around issues of alternative

energy and resource recycling and taught in a building that was as much a part of the exploration as the class assignments. Symbolically, the building was an umbilical link, interpreting the processes of procreation and providing nourishing resource to one's offspring. The building supported itself and its inhabitants and was a learning model inspired by John Todd, founder of the New Alchemy Institute, one of the early sustainable design leaders.

This early academic building was one of the first solar structures containing active and passive systems. It contained an aquaculture farm, greenhouse, and wood-burning stove. The stove's ashes were recycled into vegetable gardens. Every piece of the building was an opportunity to expand a student's understanding about physics, botany, energy flow, and sustainability long before "green architecture" became fashionable. This was happening in 1977 in a building shaped and designed mainly by staff, faculty, and students.

Agassiz Elementary School
cafeteria entrance with stone doorway from old school
Architect: HMFH Architects. Photographer: Wayne Soverns, Jr.

Sculco's teaching principals of the 1970s were the cornerstone for how his science classes are taught today. "Academics must rise above teaching the principles around why things bounce and squash under pressure. There is an opportunity for educators to reconnect lessons that have been reduced to merely principles back to the reality that made them significant findings worthy of knowing and learning."

Noble's had literally given new meaning to organic architecture by creating a building that was more than a stylistic statement of form. The building itself was alive. It did more than house sterile spaces where teaching occurs when the class bell rings. The building became an interactive experience of scientific opportunities and a literal hands-on experiment. Buildings do make a difference, especially when they are designed to engage different students in different ways.

Integrated science programs are not limited only to the field of science. Different needs and frameworks outside of the learning lab are firmly rooted to their own communities and connect to real-world issues. These integrated programs are tailored around activities or topographies that are indigenous to a student's home or region. Courses of study have focused on farmland and agriculture, forestry and wildlife, and shoreline communities. Defining the real-world client situations in which students can become fully engaged is extremely important. In addition, course studies should connect to cultural resources, libraries, museums, and other academic institutions.

How science is being taught does influence architects. There are pockets of uniqueness in all education disciplines that demonstrate the true essence of creativity and learning. Some of today's educators freely experiment with an entire alphabet of approaches and methodologies to teaching. However, many educators still view students as empty vessels to be filled through rigid teaching formulas.

Science is exemplary of other education disciplines where students can gain command of subjects or processes through discovery-based learning environments. These are hands-on experiences that invite students to immerse themselves into a project and learn by doing. Students get excited when they walk into one of today's learning labs rather than a static classrooms. Besides, once a student graduates and becomes a researcher or scientist, it is in the laboratory where they will be making their living.

In creating innovative learning environments, one's experience and wonder is able to spread throughout

the building-inside, outside, on the ceiling and walls. Ways in which this is done may include:

- Connecting indoor environments to the outside natural environment
- Building educational space that integrate into the living environment
- Buildings themselves can be a learning experience through integrated solstice walls, sun dials, pendulums, secret views bird nests, bee hives, reflecting pools, fish tanks, green houses, and reflecting mirrors.

Cast concrete walls can hold fossils to demonstrating various levels of the Earth's strata that illustrate life forms from various periods. A three-story barometer in a stairwell makes for an interesting assent. Students are not only curious and interested in these functional aesthetics, but they are tangible opportunities for trustees to donate a particular piece of the experience. The financial giving for these elements will foster an institutional camaraderie among alumni and a shared ownership from generation to generation.

Open spaces can vary in height and form-not the standard 9"– 0' ceiling with 2 x 2 grid ceilings throughout. In one city school, housed within a reused warehouse, student's created the classroom walls. A continually changing aesthetic was created that incorporated display spaces for their class projects. Revealing a building's systems through Plexiglas, such as pipes, galvanized ducts, junction boxes and wiring, and air delivery and ventilation systems, shows that a building is a complex organism. At one university, the most popular tour is through the underground tunnels between buildings. Behind the scenes, life-support systems are often more fascinating than the public facade that is shown.

Materials and Spaces:

- Create ceiling height variations
- Offer a variety of materials and lighting sources
- Control glare on floors and ceilings
- Control sound in multipurpose performance and lecture spaces
- Provide ample tack space in lecture lab at eye level and high around-the-room parameter
- Allow for ceilings to accommodate hanging models, mobiles, and works in progress
- Install traditional blackboards rather than white erasable marker boards
- Include nooks and crannies for informal tutorial
- Offer lockable project storage
- Provide ergonomically proper clearances for computers
- Provide ADA-accessible computer stations
- Provide linked greenhouses with separate atmosphere controls
- Include operable windows
- Suspend power outlets and data links from the ceiling.

Carroll School of Management, Fulton Hall, Boston College

Reforming Educational Curricula

In 1960, 20 percent of all jobs were professional positions; 80 percent of the jobs were accessible to high school and technical school graduates. By 1990, 60 percent of the jobs required college or professional degrees and many of the remaining jobs are positions that offer little opportunity for advancement without further education and job retraining.

Today's rapidly changing environment demands new skills. Learning is a life-long process regardless of one's career. Employers are looking for people who are adaptable and can work in teams. This is frequently a contradiction with how most students are taught. In schools, separation among students is frequently enforced by teachers and sharing of information is viewed with disdain. Group learning is more in line with how the world works and how professional teams evolve to solve problems.

Currently, many teachers, administrators, and facility directors are over 50 years old and retirement may be a decade away. This fact has nothing to do with age discrimination. It does acknowledge that these individuals may be locked into the rigid 1960s teaching models. Professionals are challenged to keep up with innovation and the latest trends on a daily basis. Imagine, an outdated academic environment that is disconnected from career awareness or any substantive exposure to real-world work. If what is being taught is obsolete, it serves no use to a student in the real world and is less desirable for prospective employers. Without innovation and bold new thinking, millions of dollars in new buildings may be built around an obsolete mind set of education.

New student teachers are likely to be encouraged to teach within the confines of an old model to please their superiors who are evaluating their performance. Innovation and experimentation, although well intended, may not be good form for young teachers who need acceptance from an institution and jobs to feed their families.

A 21st Century Educational Mission

- Prepare lifetime learners who will bridge interdisciplinary boundaries.
- Create learning environments that encourage young adults to work cooperatively as a team.
- Develop solid foundations in science, math, and technology literacy.
- Teach students through models that can be applied in their lives.
- Integrate work-based learning that connects with adult work environments.
- Design multifunctional classrooms conducive to both hands-on learning and passive listening.
- Allow for demonstration galleries to express an institution's mission and showcase student work.
- Accept that new media technology will become integral to every learning experience.

A young adult today will change jobs seven times between ages 16 to 27. This is not so much a rebellious explorative nature as it is the reality of the professional workplace. These young adults need a versatile and transferable skill set to make their place in the world. As seen in specialized technical schools, only one in four graduates will ever work in that one specific field. The rest will take their learned skills and knowledge to map out their own purpose and destiny.

Every person is different. The multiple intelligence model acknowledges that each person learns differently. Stimulating interest or actual learning for some people may need to be more visual, analytical, hands-on, or require more social action.

The rigid teaching grid typically is what is practiced in academia. It forces everyone to learn the same material, at the same pace and is taught and tested in exactly the same way. This can be a confining experience. There is little or no latitude for students to learn according to their intelligence model

or at their own pace. Nor are students encouraged to deviate from the grid to shape their own synergy between the material being taught and real-world applications.

If education is intended to uplift, enrich, and reveal the full potential of the individual, why then is there a mass sameness and packaging to how students are taught? Are the nonconforming and more experimental learners rightly labeled defiant, disinterested, or A.D.D. when little effort was ever made to understand those students' intelligence patterns and interests? Again, everyone learns differently and coursework and classrooms can become more conducive for a multitude of learning styles.

Teaching and Learning Today

- Any class experience that lasts more than one hour becomes dull and boring.
- With team teaching and self-paced learning students buy into their education.
- Unique linkages must be made across all disciplines and through all grades levels.
- Classes, as well as departments, should be interconnected and offer linked course learning.
- Connections and relationships to real issues and real people in the community are essential.
- Opportunities for faculty, staff, and student integration should be encouraged.
- Many private school models are highly successful and could serve as a universal model.

Thomas C. Hsu, PhD, founder and president of the Cambridge Physics Outlet, Inc., is a nationally recognized innovator in science and math education in elementary-through-college settings. Hsu has created interactive tools that allow students to explore the world, not merely sit through rote learning of someone else's exploration. His curricula are supported by hands-on materials that are being used across the board to foster academic integration-social studies, physics, English, and mathematics are all put together and learned in a way that is useful, relevant, and applicable in society.

Integrated learning is a process stimulated by thinking about the world, observing the world, and learning the skills that enable us to respond to the world. Hsu states, "Teaching science require process skills that students learn from hand-on skills. Science is not something to be taught from books. Math is a problem for so many people because it has been taken away from what it is used for. In many teaching settings, math has been reduced to a set of symbols absent from its applied use and purpose. Learning occurs by hands-on doing and spaces must be conducive for this. Rooms full of little desks belong in penal colonies not in a modern classroom."

One comparison would be to look at how most of us learned English as a primary language. We learned by speaking, by modeling others, and by making immediate shifts to our speech patterns and inflections. We did not learn English by first knowing the exact meaning of each part of speech. Many math classes rehearse and test on each part, but never complete the mathematical sentences.

Program Planning

Thomas C. Hsu's remarks were candid and refreshing. He reinforced what many people have experienced one time or another as students but rarely say in a public forum. "Today, many buildings, not only academic buildings, are still designed and built without consulting the users. This is appalling and an insult to the people who have spent years as educators and dismisses the seriousness of students about their learning."

Both the architect and academic client must realize that the buildings they build today will last for the next 40 or 50 years. The one certainty about the future is that change will be a constant. So do not build a time capsule that is fixed into one rigid program. Do not create these buildings in a vacuum or be limited or confined by egos of only a few involved. Learn from others. Talk to architects and administrators who have recently gone through the planning, design, and building process. Visit other schools. Take photos and emulate others' successes and recognize their mistakes.

Most importantly however, is to establish the needs of user groups-teachers, trustees, voters, and especially students. Remember, this new facility is rightfully theirs, so engaging all of the stakeholders in the earliest stages of the planning process should be the rule rather than the exception. Logically, by meeting the needs and wishes of users, especially students, there is a direct correlation of how students treat a space and how they feel about their learning experience within it.

The vision for a project should be coauthored among the client, the users, and the architect. It is a process that challenges assumptions and reveals the full potential of a facility. Through the integrity to facilitate and nurture this process, a future vision shall come forth that is unique to an institution and where it is heading. Visioning does not evolve from a set of predictions based on extrapolations of past and existing trends.

We must move beyond the rote space-needs assessments and calculated square-footage programming toward a more dynamic process that stimulates creative expression and evokes the true culture of the institution. Revealing the transcendental truths of an institution's beliefs and mission is where the design challenges lie. Meeting these truths through design is where creative spaces are born.

Stakeholder groups made up of teachers, staff, and students can remain actively involved beyond the design planning to take actual ownership over pieces of the building. How often do we see static display cases of memorabilia that are frequently irrelevant to the majority of an institution's population. Displays can become dynamic expressions of a school's culture through the hands of students who may paint a mural and continually add to it or exhibit class projects along corridor walls and in demonstration galleries.

Defining the Goals Behind a Building Initiative

A school's building mission, be it social, educational, or recreational, needs to drive the definition of space allocation and program. Achieving a clear vision for a program requires little interpretation if user groups and stakeholders are engaged through a facilitated process that moves a project forward toward clarity and a higher level of refinement.

Begin by defining the underlying rationale for a project:

- The institutional mission
- The department mission
- The user's mission.

Ask and answer all the questions—both complex and simple.

- What are the most important curricular objectives ?
- What is being met in the existing facilities?
- Where are there shortcomi. gs in our existing facilities?
- What spaces are sacred; to remain untouched?
- How should technology be integrated into the new plans?
- Where is the front door?
- Where does the trash go?
- Is there enough closet space?
- How might things change in the next 20 years?
- How will our new space adapt over time?

Look. Learn. Listen. Never underestimate the value of a bad example.

- Go to other schools and look at the good, the bad, and the ugly.
- Talk to people at other campuses who are planning, completing, or living with a new building.
- Ask your own students, faculty, and staff for candid opinions on existing facilities.
- Offer a no-budget, wish-list brainstorming session to get ideas flowing.
- Take photos and catalog good and bad examples- at your facility and at others.

Don't pay the cost of lost opportunities. Reveal the hidden gems.

- Is the site south-facing?
- Can there be links to the outdoors?
- What are the obvious adjacencies to other spaces or buildings?
- Are there scenic views?
- Is the building's best face being put forward?
- What does a building say, inside and out?
- Are we respecting our neighbors?

Improve the Program-Improve the Result

Rob Riordan, a teacher and research associate at The Big Picture Company in Cambridge, Mass., comments on Agassiz Elementary School, Cambridge, designed by HMFH Architects. "The teachers were walking on air the first few weeks. This is a perfect example of how a new learning environment can uplift teachers and students."

It is difficult to create new learning programs in old-model school buildings. New types of spaces are required that aim for small units where learning communities, identity, and ownership can evolve. A physical location in the community and a curriculum that makes a connection to the outside world are critical.

Flexible work spaces are needed that offer collaborative project work tables, comfortable chairs, and a space for presentation. Students who thrive in new learning environments at school must be supported equally by a place to think clearly and to work quietly at home. Suitable study spaces need to be created in the home. Parents must also be active and engaged in a child's learning.

The Rindge School in Cambridge had first evoked an image of an 1800s classroom since it is housed in an existing building more like a warehouse. This began to change radically when a fully integrated environment was created for students, teachers, parents, and the community to work side-by-side. This central meeting place is used as a lounge or study area, as well as a professional meeting space. A mural, painted by students, surprised everyone since the students had little formal art training. The mural creates a nonpublic school, noninstitutional environment. There is an overwhelming pride of authorship throughout the entire school, which has resulted in little or no property damage and vandalism.

Performance Spaces

In performing arts centers there is a true need for the actors and audience to connect. General assembly spaces can be used for performing arts. However, too much integration of multipurpose spaces may defeat any one purpose.

The width of the audience fan can be problematic for a play, yet be ideal for a lecture environment. Accessibility issues are frequently in conflict with sight lines of a performance setting. The vast spaces found in high school and college auditoriums may serve only to create strained voices for young budding performers. If these are to be multipurpose spaces, how do you cut down the amount of volume the performer perceives?

The debate over seating styles is ongoing with its share of trade-offs between traditional and continental style seating. Narrow is good for veteran theatergoers but may not work for new audiences attending the theater. Determine the seating that is right for the user, types of performances, and anticipated audience. Learn more about the demographics of the audiences who will be using the performance center. Do not repeat a seating design out of a manufacturer's kit.

Libraries and Media Learning Centers

Libraries, too, are evolving beyond the typical warehouse for books to become knowledge and media information centers. A quote from an unnamed curmudgeon librarian said "There's nothing wrong with libraries except for the damn students." There's no doubt an attitude and reality shift is needed.

As the library environment changes, so will the role of librarian. This position will evolve into a hybrid of teacher, instructional consultant, collection developer, program manager, resource provider, technology manager, traffic controller, and information concierge for an ever-expanding digital resource. This may sound daunting but users will quickly learn new technologies and evolve its use into their everyday life. No more card catalogs or being yelled at for talking in the "library."

Daylighting was once avoided to preserve rare volumes and archives. This mode of warehousing and preserving has become a thing of the past unless you are housing a rare archive. Seating with table height standards for reading are still used and computers are simply placed on-top of tables in the wrong position and in the wrong light. Aesthetics function as more than simply appearance.

Function and Aesthetic of Spaces

- Lighting is critical and integral.
- Design zoned lighting with individual controls wherever possible.
- Employ task lighting.
- Proper ergonomics are essential for a computer environment.
- Create inviting spaces for reading and research.
- Control sound levels.
- Use darker-colored floors with more neutral-colored work surfaces.
- Include operable windows.

Today's world requires on-demand access of information. This is possible via Internet access from one's home or in the cyber cafes. The library/media centers must offer amenities that attract people to settings that are more conducive to being social learning centers rather the centers for silence of the past. Envision an active learning laboratory where there are computer terminals, instructional areas, production areas, meeting spaces, quiet spaces, and output resource rooms.

Imagine actually introducing food and beverage to link a new library/media/learning center together with the student center. Savvy marketers have created new trends that make food and coffee an essential part of today's bookstores and cyber cafes. Imagine reading a book or computing at home without your favorite beverage and a few Oreos nearby. Technology is a draw and it can be used as an integrator of people, not an isolator. For information to be useful it is meant to be accessible, handled, and used. Technology makes this possible by digitally converting images, text, and film footage of rare or fragile collections into a usable medium.

Sloan School, Massachusetts Institute of Technology

New Media Technology

In the world and in the educational environments, technology supports learning that reaches far beyond what is taught in the classroom. Technology enables a teacher to guide a student to explore and discover answers for themselves. The Internet allows students to focus and communicate with research teams around the world. Almost instantly, answers are returned to fascinate the students and to teach the teacher. Technology has made experiential learning possible through simulation, experimentation, and modeling.

A few decades ago the telephone was the most innovative technology to reach the general public. Early phone use was considered sacred and phone time conserved. Today, the telephone is nearly an extension of one's anatomy. Life without a phone would be nearly impossible. New media technology is evolving the same way.

In President Clinton's 1996 Inaugural Address, he urged Americans to bring poetry to all our schools. Through technology, all people will have access to the same universe of knowledge. The real challenge for America is to ensure that information technology becomes the educational bridge, not a barrier, to the 21st century.

Computers are not a separate subject. They are are integral tools to the entire curriculum. Computers are our way of communicating, the pen and paper of 21st century. Worlds beyond Internet and the World Wide Web involve area network infrastructure, such as internal e-mail and file sharing. Network design must accommodate increased users offering at least 100 megabytes per second and allowing for increased capabilities. Nearly all desktop computing environment connect to servers, printers, and Internet access. Telecommunications computers are tools to exchange information among people with voice and motion image transmission. All of these systems are being integrated into learning environments and ideally, are being designed to expand to new services and user demands of tomorrow.

Schools have brought technology into the classroom thanks mainly to user-friendly platforms like the Apple Macintosh in the early 1980s. Today, computers are not as much for fun and experimentation as they are about integrating curriculum and instruction. This technology integration improves a student's learning outcome, refines their leadership skills, and is an essential ingredient for education reform.

The incentive programs by state and federal governments for schools to upgrade and modernize with the latest computer technology must be carefully weighed over essential infrastructure improvements. Investments in technology should never be put before the health and safety of students and teachers by deferring repairs to leaking roofs, improving inadequate air handling systems, and repairing crumbling walls.

Planning for Technology

- Design the appropriate configurations using multiplatform systems that share information regardless of format or platform.
- Technology access is 24/7 and must be dispersed throughout a facility and across a campus.
- Versatility in the computing environment and in the connections should accommodate growth and shrinkage of class sizes, support group learning, and allow spontaneous connection of individual laptops.

In this age of technology, try to perceive every possible location for data connections and be flexible enough to adapt to change. It won't be long until everyone is using a hand-held personal communicator to access the World Wide Web and transmit voice and image data through wireless infra-red signals. Regardless of how sophisticated virtual high technology becomes, there will always be a need for a relief valve into high touch spaces where people connect face-to-face. These may be outdoor gardens, reflecting pools, or other spaces.

The Architectural Profession

The examination of specialties in education facilities brought with it a self-examination for the architectural profession. Here is a synopsis of the discussion.

The architectural profession is moving from the traditional production-based services into more of a knowledge-based service profession. Architects are encouraged to develop their practices by exploring specialized areas. These areas may include program planning and predesign, facility condition and structure reports, historic preservation, property management, life-cycle analysis, site selection and corporate relocation, technology and information systems, marketing, and developer partnerships. These are a few of the specialties offered by architecture firms to create entirely new revenue centers. These services go beyond design and production and are based on intellectual knowledge, strategic problem solving, and facilitation skills.

There are brave new worlds to be developed beyond the "boards." As career changes lead new professionals to the architectural profession, architects are urged to welcome this cross-fertilization by those who offer a new skill set. Newcomers bring experience from business, education, finance, development, management, marketing, design, communications, and law. The architectural profession can only benefit by integrating new design professionals. These new additions to our firms will help us better serve clients, identify new opportunities, and develop our own practice.

Similarly, many architects are moving beyond design and building to meld their experience into new careers. Professionals with architectural training can be found in government agencies, education, and nonprofit foundations. Architects are photographers, writers, publishers, toy designers, and Hollywood movie set makers. Architects work in forestry, preservation, and new media technology. The study and practice of architecture offers tremendous

potential to lead fulfilling lives within and outside traditional practice.

For a professional evolution to occur, architects must explore new opportunities that incorporate all they have learned and apply their knowledge to limitless applications. Striving for a more broadly defined profession affords us a greater influence and expanded roles that have gradually been given up to, and developed by, professionals in other fields. By expanding our view of how an architectural education can be used, we are likely to attract a greater pool of students to the profession. Of course, to foster this, architects must change the time-honored notion that an architectural education leads along a singularly focused path to licensure as the final destination. There are new realities for what architects can do. Large numbers of professionals with architectural training shape public policy, influence development decisions, and oversee design projects.

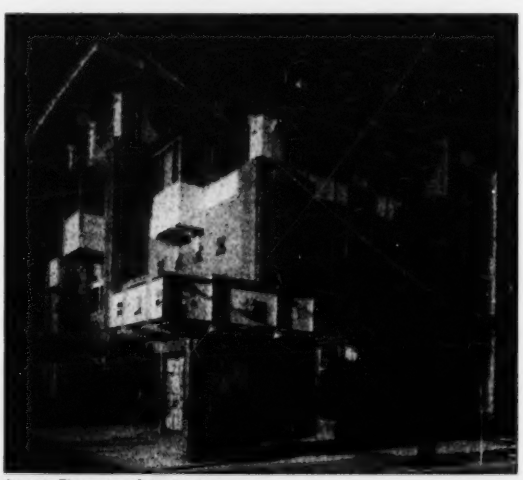
Robert Campbell, FAIA, stated, "Architectural education does encourage exploration perhaps more than any other field. It is a process of making steps forward and learning from the response. We are asked to observe, assess, and enlighten a project by the circumstances that surround it. The ability to assimilate information means an architect must go to the building, the argument, or the issue with an open mind and absorb every thread of that issue. You cannot do this effectively with a checklist or rigid doctrine. This is the foundation for integrating a broad set of skills in a problem-solving process." To objectively communicate the possibilities an issue holds is perhaps the most essential skill for architects-as communicators.

"Some academics in architectural education," Campbell said, "believe you develop a philosophy and go out and test the world against it, a rather closed and limited approach to revealing new possibilities. On the other hand, there are academics who support the notion that architecture is the embodiment of ideas." A process of true exploration is where solutions evolve through assessment and by revealing layers of information rather than dictating a prescribed solution.

"Buildings, like poetry," Campbell continued, "should be purposeful, playful, and ethical. Playful is the fashion, the inventiveness, and creative part. Exploring this playfulness is how time is marked through the design of the built environment. This playful invention of form is a benchmark to admire, or to get bored with and evolve from by reinventing against this form. This is good. It shows progress or at least an attempt at change." A purposeful and ethical grounding ensures the architecture is intended for its users, is appropriate for the culture, and respects the conditions in which it is being placed.

Planning and design used to be driven by the power centers and their architects whose work in many ways was equally self-serving. These relationships among a select minority have frequently resulted in unethical decisions for the majority public good.

We have a better process. Democracy. A process that involves the public and extends to them a significant voice in what is being planned, designed, or intended. In many circumstances, this is not always an ideal process and, yes, its parameters may need to be more clearly defined. A successful democracy still needs leadership and vision. However, the successes seen through public participation and grassroots, coauthored initiatives have achieved tremendous results. This process has unquestionably restored a sense of pride and ownership and served to create purposeful architectural results.



Agassiz Elementary School, exterior
Architect: HMFH Architects
Photographer: Wayne Soverns, Jr.

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